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# Activists, Pragmatists, Technophiles and Tree-huggers? Gender Differences in Employees' Environmental Attitudes

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**ABSTRACT.** Although there are suggestions that the environmental attitudes of men and of women differ, there have been few studies that study and evaluate these differences at the workplace. Given the claim of Ecofeminist writers about the environmental superiority of women's environmental attitudes, and the proclaimed need of business to change attitudes and behaviour with regard to the environment, this is a surprise. The paper is based on 1022 (37% from women) questionnaires which were collected in a U.K. pharmaceutical company, and it compares the empirical results with environmental attitude archetypes, such as those prescribed by O'Riordan. However, the attitude clusters that were found do not correspond greatly with such theoretical modes of environmental ethics. Instead, it appears that women were more likely to be actively involved in environmental behaviour, and showed greater scepticism towards the role of technology in the search for solutions to environmental problems. In addition, men sought to a much greater extent a consistency between an environmental rationality and their behaviour. Men's attitudes were also much more influenced by their position in the organisational

hierarchy. There were few significant differences across age groups.

## Introduction

While the attitudes of individuals towards environmental issues have been widely canvassed during recent years, there have been remarkably few gender-specific studies of this phenomenon (van Liere and Dunlap, 1980; Schahn and Holzer, 1990) within organisational contexts. At best, one finds gender differences referred to in passing as part of a larger empirical study (Brown, 1992), and when these are discussed, there are conflicting accounts of the influence of gender on environmental attitudes reported (Steel, 1996.) Schahn and Holzer (1990) write, "Positive relationships found in one study . . . are reversed in another." It would seem that particular contextual issues are at play which transcend gender differences, and, indeed, some papers do address specific situational issues directly and consciously (Arcury and Christianson, 1990; Robin and Robin, 1997). However, the more general response has been to ignore or gloss over the conflicting findings on gender and environmental attitudes, merely pointing to the confounding effects of context and other background variables – even though the importance of a diversity of attitudes, social backgrounds and perspectives is fairly well established in the business ethics literature (Siciliano, 1996; Poser and Schmidt, 1993).

This is surprising from an Ecofeminist perspective, which, after all, starts with the premise

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that there is a link between the exploitation of women and the natural environment and that women's behaviour or attitude is leading to reduce environmental impacts (Burningham and Twigger-Ross, 1998). However, the precise nature of the link and the resulting explanation as to what makes women better at dealing with nature is subject of some debate, yet the assertion, if true, should lead to significant advances in the way environmental management is pursued.

While the empiricists have been making a cursory exploration of the gender and environmental attitude question, Ecofeminist theorists have been giving it close scrutiny. However, this close scrutiny has resulted in little consensus, but rather in a great deal of heated and pointed debate (Merchant, 1992). For instance, cultural ecofeminists argue that, for biological and reproductive reasons, women show greater identification with nature and ecological processes, which means that women have distinct values from men – specifically values that emphasise caring and nurturing over resource exploitation and domination and women are, *ipso facto*, environmentally more benign (Eisler, 1990; Collard, 1988).

Critical ecofeminists, on the other hand, are based on biological determinism and thus reject the image of the benign Earth Mother as limiting to women's expression of their being. They have argued for a deeper understanding of how systems of oppression grew out of and are sustained by dualisms such as culture/nature, reason/nature, male/female (Plumwood, 1993). They also argue that the link between women and nature manifests itself in the hierarchical dualism in western thought, arguing that their similar conceptualisation meant a similar legitimisation for their oppression. Furthermore, social ecofeminists, such as Mellor argue that

Women, having been . . . placed in a subordinated position within western/patriarchal, dualist socio-economic structures alongside a devalued natural world, are better placed to see the way in which social relations have an adverse impact on the natural world than men in their superordinate position (Mellor, 1997, p. 201)



By contrast, liberal feminists have had literally no time for such philosophic debate, being focused on breaking through the glass ceiling which blocks their way to the top in their chosen professions. Even here, however, in the pragmatic corporate and professional world, there has been the occasional whisper, an intimation that possibly women are different from men and that consciousness of this difference might lead to an enriched understanding of corporate life. Thus the call was heard for androgynous management in the 1970's and more recently for feminised organisational cultures (Dobson and White, 1995.)

This paper finds itself wedged uncomfortably between these two streams of academic thought, which, ironically, give so very little thought each to the other. It recognises the power of empirical data, even in a post-modern world, and accepts that business likes information presented in a manageable format. Furthermore, it recognises that context is a key mediating factor which renders comfortable business decisions based on formulae and matrices, far from accurate and useful guides to business strategy. To this end, this paper reports empirically on the environmental attitudes held by staff of a large multinational pharmaceutical company, and highlights the effect of gender on beliefs about nature, corporate environmental practices and personal responsibility for sustaining the ecosphere. Given that personal environmental attitudes often correlate and interact with organisationally held environmental beliefs (Mudrack and Mason, 1996), this is a relevant topic for this journal. The effects of other background variables such as age, rank and departmental placement are considered, in an attempt to understand their complex interactions with gender in the context of a multinational research-led business corporation. Throughout the data analysis, a sharp eye is kept on the more philosophic debate. This debate addresses the essential nature of women and the ways in which the world, and more specifically the business world, frames its understanding of women, their actual or imagined influence on organisational culture, and their contribution to business activity and outcomes.

To elicit variations in environmental attitudes between male and female staff, the following Null Hypotheses were established:

- Environmental attitude data was collected in the U.K. operations of a large multi-national pharmaceutical firm. A questionnaire was chosen as a survey tool as it allows to ascertain data of a large number of respondents at relatively little costs. In addition, the differences between gender, organisational hierarchy, age and place of work were seen as the relevant part for this study,

The four categories were translated into a five point Likert-type scale to measure each variable. The present study reports the personal environmental attitudes of female employees and compares these with male employees' attitudes to ecological issues.

<b>Eco-Centrism</b>		<b>Techno-centrism</b>	
<b>Gaianism</b>	<b>Communalism</b>	<b>Accommodation</b>	<b>Optimism</b>
Belief in the rights of nature and of the essential co-evolution of humans and natural phenomena	Belief in the cooperation capabilities of societies to be collectively self-reliant using "appropriate" science and technology	Faith in the adaptability of institutions and mechanisms of assessment and decision-making to accommodate to environmental demands	Faith in the application of science, market forces and managerial ingenuity
Redistribution of power towards a decentralised federal political economy based on the interlinkage of environmental and social justice		Maintenance of the status quo in existing structures of government power	
			

In the present study O'Riordan's (1981) (in Porritt and Winner, 1988) categories were factor analysed to determine if there were any underlying dimensions relating to personal environmental attitudes. Mean scores were determined for male and female respondents along these dimensions, and ANOVA and Tukey's Honestly Significant Difference Test were applied to determine differences between these means and for others of interest across age, organisational level and department.

With all questionnaires, the possibility of non-response bias must be considered. However, as data about the distribution of the population across the gender, age, hierarchy and work place scales was known, the data was analysed with regard to non-response bias. With regard to gender, age structure, place in the organisational hierarchy and association to workgroups, no significant difference between the population and this sample could be found, thus excluding the possibility that certain groups systematically preferred not to respond. This leaves the possibility that staff with fundamentally different environmental attitudes preferred not to return the questionnaire. This is a possibility, but no qualitative reason for this to be the case emerged during the discussions with staff. In fact, during presentations, the results were generally seen as being very representative of the overall environmental and corporate culture of the organisation.

## Results

Using O'Riordan's (1981) (in Porritt and Winner, 1988) categorisation, a Reliability analysis on the paraphrased of the above environmental ethics modes was performed to evaluate the consistency of the measurement scales and the items that make them up. The results showed that  $\alpha$ -Reliability of the four factors were somewhat low: The values were 0.6842 for Gaianism, 0.4659 for Communalism, 0.0929 for Accommodation and 0.2372 for Optimism respectively. This suggested either a wrong verbalisation and variable formulation from the modes, or that environmental attitudes espoused by the respondents are a mixture of the

modes, a finding that was discussed earlier in a similar study (Wehrmeyer and Parker, 1995).

Allowing for this possibility that environmental attitude clusters lie across presumed modes, a Principal Components Analysis (PCA) was performed on the 27 items measuring personal environmental attitudes and after Varimax rotation, four factors emerged each with an Eigenvalue greater than one. These four factors explained 38% of the total variance in the data and the factor loadings and communalities are shown in Table II.

Factor 1, which explained 17% of the variance in the data, was concerned with individual's actions in support of environmental protection. Variables which loaded most strongly on this factor included, "encouraging others to protect nature," "trying to do my bit to protect the environment," and "being active and interested in the environment." To this end, the factor has been named *Conscientious Activism*. Of interest to corporations is the fact that conscientious activism, whilst a personal choice and orientation, is linked to the choices of the firm in so far as the latter might need to rethink its privileging of profit over environmental concerns. Furthermore, the organisation should seek a good environmental reputation if it wishes to keep staff scoring high on *Conscientious Activism*, and it should communicate openly with them.

Factor 2 explained 10% of the variance in the data and related to institutionalised activities undertaken by the firm in relation to the environment. This factor, which has been named *Corporate Environmentalism*, relates to the sharing of information about the firm's choices and actions on matters involving the environment. It involves training programmes to sensitise staff to environmental issues and there is a very real sense in which this factor relates to an activist organisation, one about which staff might feel real pride.

Six percent of the variance in the data was explained by Factor 3. This factor has been called *Deep Green* because it relates to a personal value system which recognises nature in its own right, as an end in itself. Variables loading onto this factor reflect the sense that humans have disrupted the harmony of nature, especially through

TABLE II  
Factor analysis: Personal environmental attitudes

Variable	Factor loading				
	Factor 1	Factor 2	Factor 3	Factor 4	Commonality
I encourage others to protect nature	0.74				0.57
Try do my bit to protect environment	0.73				0.59
Active/interested in environment	0.63				0.43
At work, I like more information on how to help the environment	0.59				0.49
Nature has a right to be protected	0.50				0.42
We should only consider the environment if it improves profitability	0.47				0.39
I like to work for a firm with a "good" environmental reputation.	0.43				0.24
Environment is more important than profit	0.40				0.34
We will adapt to nature if necessary	0.37				0.19
Info. Req on co.'s environmental activities		0.82			0.68
Easy find info. on environmental activities		0.76			0.60
Pride in co.'s environment performance		0.68			0.55
I have enough environment training		0.67			0.48
Co. should do more for the environment		-0.47			0.45
Nature sets absolute limits			0.59		0.35
We have disrupted nature's harmony			0.53		0.40
Nat. harmony not progress			0.51		0.43
Better minimise than maximise			0.45		0.22
Protect. nature is an end in itself			0.39		0.29
Right tech. to protect nature				0.54	0.32
Care for nature starts with me				0.54	0.33
Human ingenuity solves all problems				0.49	0.32
Protect nat. via self-sufficiency				0.44	0.38
Not sacrifice lifestyle for environment				0.39	0.29
Environment. protection starts at top				0.35	0.18
Solve env. Problems with rationality				0.34	0.25
Co.'s environmental policy is reactive				0.27	0.12

our notions of progress. There is also a strong feeling that nature sets limits on human activity, and that it is preferable to minimise inputs rather than maximise outputs in our post-industrial world.

Factor 4, explaining 5% of the variance in the data, suggests that technology will provide the answers to all ecological challenges and thus, the factor has been named *Technological Omnipotence*. While the environment is seen to be one's personal responsibility, the overarching belief is that human ingenuity, when coupled with

technology, will provide the answers to all the difficult environmental challenges. There is no indication that changes in lifestyle will be required, but rather there is a sense that rational man, with the guidance of effective policy, will meet all ecological challenges.

The reliability of each of these four factors (calculated using summated factor scores) was determined and the alpha reliabilities are reported in Table III.

The reliabilities for *Conscientious Activism* and *Corporate Environmentalism* were quite good,

TABLE III  
Factor reliabilities and mean scores (male/female)

Factor	Alpha reliability	Mean scores		Level of sig. diff. of means
		Male	Female	
Conscientious activism	0.73	3.84	3.92	0.01
Corporate environmentalism	0.78	3.04	2.95	0.18
Deep green	0.55	3.25	3.28	0.40
Technological omnipotence	0.45	3.32	3.26	0.05

Where 1 = "strongly disagree" and 5 = "strongly agree".

while those for *Deep Green* and *Technological Omnipotence* were somewhat low. However, they have been judged adequate for progressing with a study of this type. Table III also presents the mean scores for each of the four factors for both male and female respondents, and the significant differences for the gender groups across the four factors. Figure 1 illustrates these results graphically. It can be seen that the mean score for *Corporate Environmentalism* falls closest to three on the scale, and although there is no significant difference between the means for each of the two

groups, female employees did place the company just below the mid-point of the scale.

The mean scores for *Deep Green*, which revealed no differences between men and women in the study, were just above the mid-point of the scale. Similar means were found for *Technological Omnipotence*, although in this instance there were significant differences (at the 0.5 level) between male and female employee responses, with women scoring *Technological Omnipotence* lower than men. This result is reversed for *Conscientious Activism*, with women

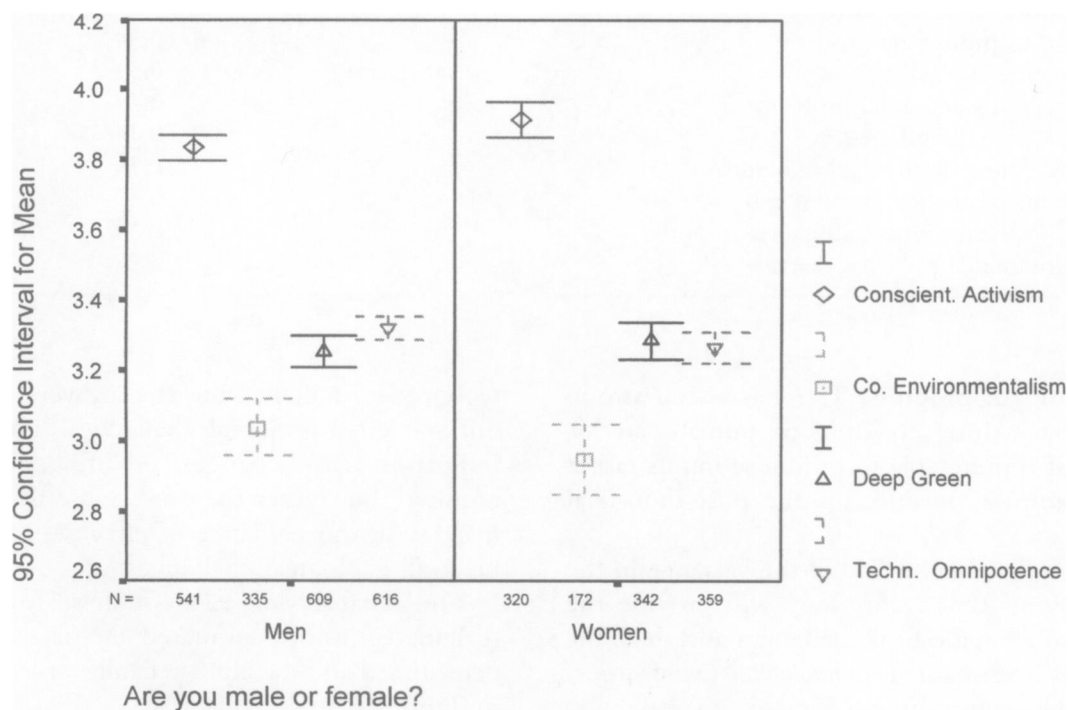


Figure 1.

scoring higher than men, (significant at the 0.1 level), and close to four on the five-point scale.

Analysis using ANOVA on the data set pertaining to female respondents only allows the effects of age, organisational level and department to be isolated for this group (Table IV).

There are no differences in *Conscientious Activism* for the women surveyed across age, organisational level and department. Similar consistency of results may be reported for *Corporate Environmentalism*. However, for female respondents there are differences on *Deep Green* by age (with older women reporting higher means), and on *Technological Omnipotence* by both age (higher mean scores being reported for older women (see Figure 2) and organisational department. Women working in the field (Sales) and in the marketing department scored *Technological Omnipotence* higher than did women working in central research/discovery (Tukey's Honestly Significant Difference (HSD) significance value of  $P = 0.0034$  and  $0.0036$  respectively).

ANOVAs were calculated for data gathered from male respondents to determine if there were any differences for this group across age, organisational level and department in relation to the four factors. The results are reported in Table V.

Unlike the female employees who showed no differences in their rating of *Conscientious Activism*, there was variation in the *Conscientious Activism* scores for men according to their level in the organisational hierarchy (Tukey's HSD test showed a significant difference between Line and Staff personnel;  $P = 0.048$ ). Similarly, whereas women demonstrated remarkable consistency across age group, organisational level and department for *Corporate Environmentalism*, men showed differences by age and organisational function (see Table V). Ratings of *Corporate Environmentalism* were high for older males (see Figure 2). Line managers and senior management also scored this factor higher than did male staff.

Differences were also found for various organisational levels in relation to *Deep Green*, with male senior managers scoring this lower than either staff or line managers (see Figure 3). *Technological Omnipotence* showed differences for male respondents working in various organisational departments. Employees in the field and in the manufacturing area scored *Technological Omnipotence* more highly than did those working in central research/development, central research/discovery and central research/regulatory affairs (all Tukey HSD at  $P = 0.000$ ).

TABLE IV

Significant differences of female factor means (ANOVAs by age, organisational function and department)

Factor	Age	Organisational function	Organisational department
Conscientious activism	0.55	0.63	0.47
Corporate environmentalism	0.09	0.24	0.39
Deep green	0.04	0.50	0.87
Technological omnipotence	0.00	0.94	0.00

TABLE V

Significant differences of male factor means (ANOVAs by age, organisational function and department)

Factor	Age	Organisational function	Organisational department
Conscientious activism	0.33	0.33	0.04
Corporate environmentalism	0.00	0.00	0.08
Deep green	0.80	0.02	0.16
Technological omnipotence	0.13	0.42	0.00



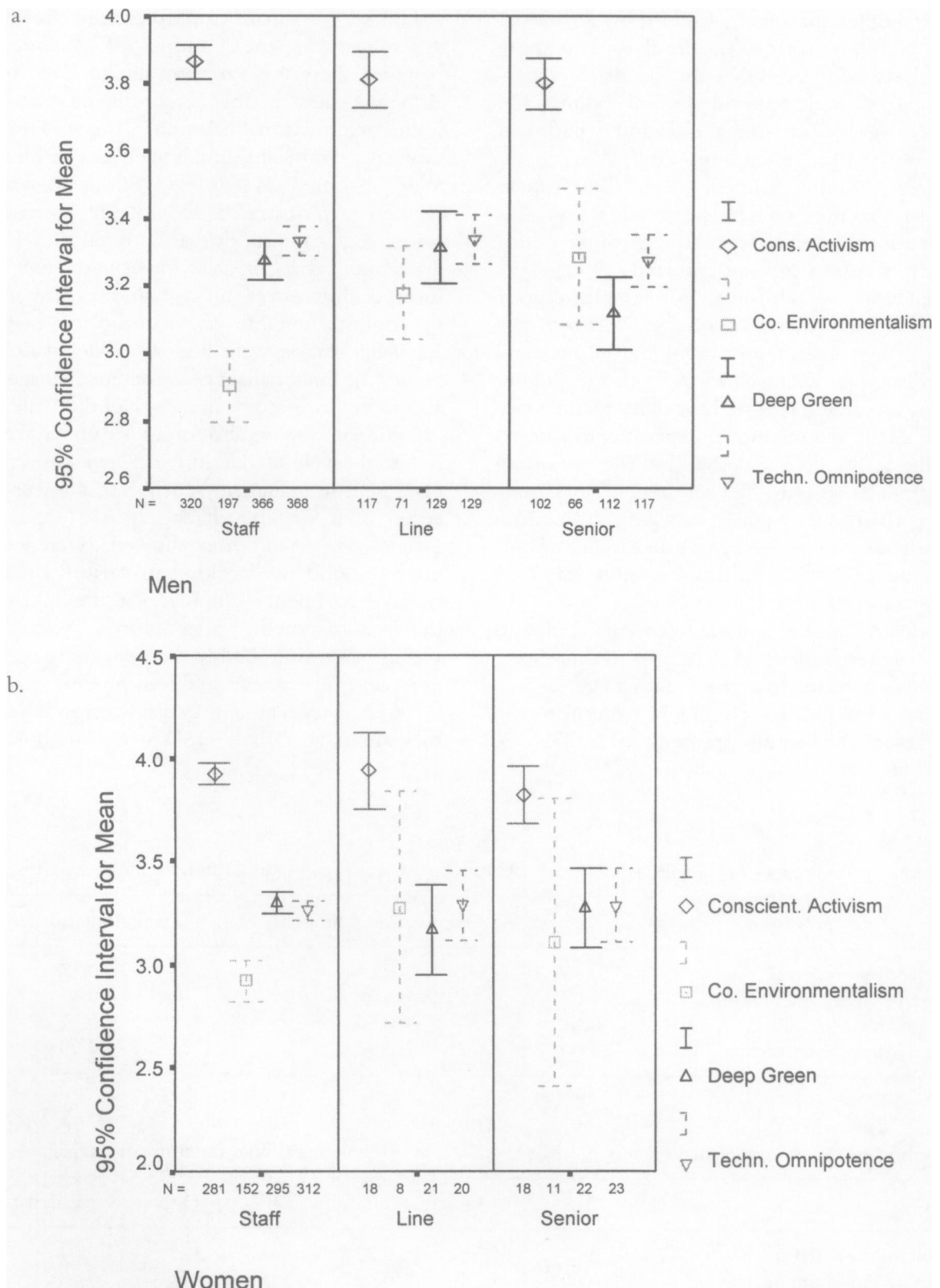


Figure 2.

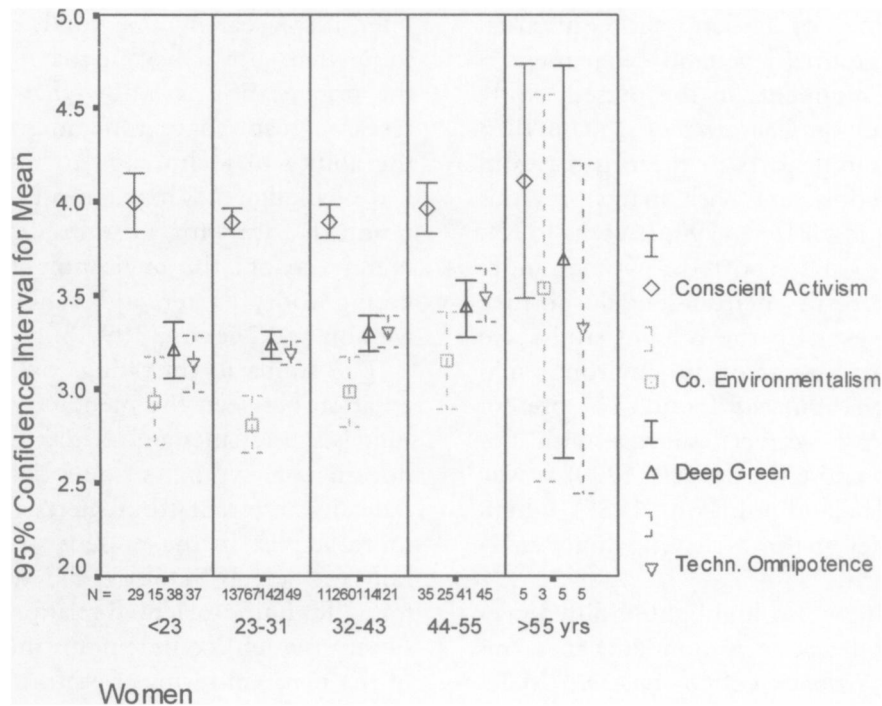


Figure 3.

## Conclusion

The present study of the environmental attitudes of employees working for a large multinational pharmaceutical company has identified four meaningful factors along which respondents frame their beliefs about ecological issues: *Conscientious Activism*, *Corporate Environmentalism*, *Deep Green* and *Technological Omnipotence*. In a qualitative comparison between O'Riordan's (1981) (in Porritt and Winner, 1988) modes and the Factors identified here, the boundaries between O'Riordan's (1981) (in Porritt and Winner, 1988) modes seem to converge in reality. *Conscientious Activism* comprised elements of Gaianism (as part of the Ecocentrism class) and of Accommodation (of the Techno-centrism class), thus comprising elements of quite divergent ethical paradigms; whereas *Corporate Environmentalism* comprised none of the transcribed modes classification variables.

Perhaps as a result of the employee context in which the survey was conducted, *Conscientious Activism* was not so much a paradigmatic world-

view but action-oriented environmental concern. Likewise, *Corporate Environmentalism* displayed not so much ethical constructs but managerial or perceptual components of environmental management in organisations and thus was process-oriented. However, *Deep Green* was a factor that drew heavily from *Eco-centrism* variables and *Technological Optimism* was clearly aligned with Techno-centrism. This points at ethical constructs being less important in the consistent classification of attitudes than action- or process-orientation. Therefore, it is suggested that further purification of O'Riordan's (1981) (in Porritt and Winner, 1988) modes be undertaken to ensure the methodological rigour of this instrument.

In the present study the alpha reliabilities were not as high in all cases as might be hoped. Interestingly, the reliabilities for each of the four factors were not improved with the deletion of any of the 27 items on the scale. The low communality of some items was also a concern which warrants further research of a methodological nature. Gender differences have been explored, with particular focus being placed on the

mediating influence of age and the contextual factors of organisational level and department.

The female respondents in the present study scored more highly on *Conscientious Activism* than did their male counterparts in the organisation. This finding is consistent with many previous studies (Schahn and Holzer, 1990; Brown, 1992), for, as Steel (1996) also reported, "Women more likely to participate in environmentally positive behaviour." However, in the present study, age was not a mediating factor in environmental activism, as Steel (1996) had found. The present findings are also in direct contrast with the studies by Arcury and Christianson (1990) as well as Arcury, Scollay and Johnson (1987) which identified younger males as having high environmental concern.

The present study also highlighted differences between male and female respondents in terms of their belief in *Technological Omnipotence*. Males were much more likely than women to subscribe to the view that technology can, and will, provide solutions to all ecological problems. While it might be too speculative to suggest that these women are wary of about technology because in some way they sense what the ecofeminists (Plumwood, 1993; Shiva, 1993) have made explicit, namely that the domination of nature by culture, science and reason, is both untenable and damaging, the respondents in the present study certainly recognise the limitations of technology in the face of mounting global ecological destruction.

Of particular interest here too is the different emphasis placed on technology by particular work departments within the organisation. Women working in the field and in the marketing department upheld the notion of technological omnipotence far more than did those women working in central research/discovery. Similar results emerged for males, with those in the field and in manufacturing scoring this factor higher than did male employees in central research/discovery, central research/development, and central research/regulatory affairs. It would seem that for this research-led organisation at least "the undermining of the 'grand narratives' of progress and reason" (Barns, 1996) has taken root in the very departments involved with

scientific research. The result is surprising and somewhat subversive, in that it might concern the organisation to know that its leading-edge research teams have fundamental doubts about the ability of technology to resolve all ecological challenges. What it most certainly does is point the way for business to do more than merely co-opt the environment as a slick marketing tool (Porter and van der Lind, 1995; Menon and Menon, 1997.)

The similarity in ratings on *Deep Green* orientation between the men and women surveyed suggests a challenge to the cultural feminist notion of women's essential nature being radically different from men's. Women may be more activist in the present study, but they are not "eco-angels." Dobson and White's (1995) call for a "feminine-oriented relationship-based value system (which) complements the essential nature of the firm" in terms of ethical decision-making would not appear to hold up in the present study. While overall results for male and female respondents are similar for the deep green factor, within each gender group there are some subtle differences, with older females subscribing to deep green values more strongly than younger females, and male senior managers espousing deep green values less than males employed in either the staff or line groupings.

Female employees in the survey scored *Corporate Environmentalism* similarly to their male counterparts, and showed a remarkable consistency in rating this factor across age, organisational level and department. Older men, on the other hand, rated the organisation higher in terms of its institutionalised ecological activities than did younger men. Male senior management and line managers also rated *Corporate Environmentalism* higher than did male staff, which suggests that the formal initiatives undertaken by the organisation may not have been well communicated to this group. It would be useful to make these environmental activities more explicit and to involve grass-roots staff in their implementation (Newman and Breeden, 1992.)

Overall, the mediating effects of age, organisational level and department on environmental attitudes were far less evident for women than

for men in the present survey. Age differences impacted on women's ratings in some instances. For the men there was a very real sense in which their environmental attitudes were mediated by their level in the organisational hierarchy. This lends support to the structural thesis that occupational roles influence the way in which employees approach ethical dilemmas (Robin and Robin, 1997). Similarly, the influence of departmental work group on judgements about technological omnipotence (for both men and women) would seem to support Robin and Robin's (1997) thesis. However, their conclusions are not borne out fully in the present research in so far as gender differences have been isolated along two of the four dimensions of environmental attitudes. Robin and Robin's (1997) statement that "women and men in a given occupation will make similar work-related decisions" may be too simplistic. The present study has found both gender differences and role-based differences at play with varying impact across key environmental attitude dimensions. Furthermore, their conclusion that "the increasing number of females in the workforce is not likely to increase the ethics of the business community, and ethical differences in gender behaviour do not warrant special management attention" (Robin and Robin, 1997) would seem to be ill-advised if the ethical decisions involve value-based decisions about the natural environment.

While writing the present empirical paper and keeping an ear to the philosophic argument about the essential nature of women, one issue sounded loud and clear. There is a very real risk of one's falling into the cultural feminist position of stereotyping men and women. While it might be comforting to recognise the women in this survey as *Conscientious Activists* with a decided sense that technology is not omnipotent, the men surveyed also hold green values every bit as deep as do the women. Thus the present paper strongly recommends, as did Derry (1996), that one "resist the feminine firm's approach of putting virtuous woman on a pedestal, standing triumphant over economic man." Derry (1996) further points out that:

Women's redemptive role will only last as long as the current wave of management theory holds sway, and then women with their feminine skills will be out on their collective ear. "Let's include women because they'd be good for us" is still a male centred, male-power-maintaining perspective.

A useful way to move forward from the current situation, which may be conceived as a gender impasse, might be to invoke a critical ecofeminist perspective. Such a perspective evaluates the limitations of our dualistically conceived world, where nature is the background to culture and reason, and its domination is taken as the norm. One might expect that this fresh perspective would be well received by those research scientists, both men and women, who expressed doubt in this study about the ability of technology to solve all environmental challenges. In Plumwood's (1993) eloquent words:

The anti-dualist approach reveals a . . . way which does not force women into the uncritical participation in a masculine-based and dualised construction of culture or of accepting an old and oppressive identity as "earth mothers": outside of culture . . . In this alternative women are not seen as purely part of nature any more than men are; both men and women are part of both nature and culture. Both men and women can stand with nature and work for breaking down the dualised construction of culture, but in doing so they will come from different historical places and have different things to contribute to this process.

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